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beginning of the Cretaceous, through the Tertiaries to and including the living species of the genus Nautilus. Its presence on the cystoceran volution in Cretacic shells can be explained only when it is considered as a transmitted, tachygenetic characteristic derived from the ancestral, nautilian shells of the Jura, which have the same characteristic at a later age, *i. e.*, in the paranepionic substage.

"7. The first conclusion is also sustained by the parallel phylogeny of the impressed zone in the ancestral forms of the Ammonoidea, the Nautilinidæ and especially in Mimoceras, the radical genus of this family.

"8. The fourth, fifth and sixth conclusions are also supported by the presence of a contact furrow on the dorsum of the earliest age of the conch in the specialized and highly tachygenic forms of the Goniatitinæ of the Devonian and of all the remaining Ammonoids to the end of the Cretaceous.

"9. These cumulative results favor the theory of tachygenesis and diplogenesis, and are opposed to the Weissmannian hypothesis of the subdivision of the body into two essentially distinct kinds of plasm, the germplasm, which receives and transmits acquired characteristics, and the somatoplasm, which, while it is capable of acquiring modifications, either does not or cannot transmit them to descendants."

S. W.

The Protolenus Fauna. By G. F. MATTHEW. Trans. N. Y. Acad. Sci., Vol. XIV., pp. 101–153. Plates I.–XI.

In a paper entitled *The Protolenus Fauna*, Mr. G. F. Matthew has added an important contribution to our knowledge of the Cambrian faunas of New Brunswick.

The Etcheminian Series, considered as pre-Cambrian by Mr. Matthew, and the overlying St. John Group, present similar stratigraphic features in New Brunswick and Newfoundland. In Newfoundland the Olenellus fauna is found in the same position as observed elsewhere, viz., preceding the Paradoxides fauna, but in New Brunswick the fauna characterized by Olenellus is absent, and the Protolenus fauna takes its place stratigraphically.

The author publishes a list, with notes and descriptions, of seventy-four species and varieties belonging to the Protolenus fauna, twenty-eight of which are new, with two new genera, *Pelagiella*, a new genus of Gasteropoda, and *Micmacca*, a new genus of Trilobites.

The fauna is of extreme interest, being a pre-Paradoxides fauna in which Olenellus is absent. The author says: "Though the Protolenus Fauna holds the place where we might naturally look for Olenellus, the genus is absent, and as so many of the genera associated with it are also absent, *we cannot regard this fauna as the Fauna of Olenellus.*" The author points out that in many respects the fauna is more primitive than the Olenellus fauna. He suggests that the two are contemporaneous, the Protolenus being prelagic, while the Olenellus is a shore fauna. Forms present in the Olenellus fauna differentiated for shore conditions, are absent in this fauna, calcareous corals and sponges are rare, and no Lamellibranch has been observed. Foraminifera belonging to genera which are today deposited most generally in one thousand to two thousand fathoms are abundant in some beds, and the Gasteropoda are of types adapted for deep water.

Heretofore the only pre-Paradoxides fauna described has been that one characterized by Olenellus, and Mr. Matthew's paper is of importance to geologists in pointing out a new facies of the pre-Paradoxides fauna. S. W.

Republication of Descriptions of Fossils from the Hall Collection in the American Museum of Natural History, from the Report of Progress for 1861 .of the Geological Survey of Wisconsin, by James Hall, with Illustrations from the Original Type Specimens not hitherto Figured. By R. P. WHITFIELD. Mem. Am. Mus. Nat. Hist., Vol. I., Part II., August 1895.

The republication, with illustrations of the type specimens, of descriptions of fossils which were originally published without figures, is a most commendable undertaking. It is a work of this kind that Professor Whitfield has done.

In the paper descriptions of forty-three species are republished, which are distributed among the fellowing genera: *Buthograptus* (1 sp.), *Callithamnopsis* (1 sp.), *Receptaculites* (5 sp.), *Graptolithus* (1 sp.), *Dictyonema* (1 sp.), *Melocrinus* (1 sp.), *Tellinomya* (4 sp.), *Cypricardites* (3 sp.), *Modiolopsis* (2 sp.), *Ambonychia* (4 sp.), *Pleurotomaria* (3 sp), *Maclurea* (1 sp.), *Ecculiomphalus* (1 sp.), *Lituites* (2 sp.), *Cyrtoceras* (4 sp.), *Oncoceras* (5 sp.), *Orthoceras* (2 sp.), *Gonioceras* (1 sp.), *Illaenus* (1 sp.).

Thirty-three of the enumerated species are from the Trenton horizon, four from the Hudson River, three from the Galena Limestone two